FIG. 1

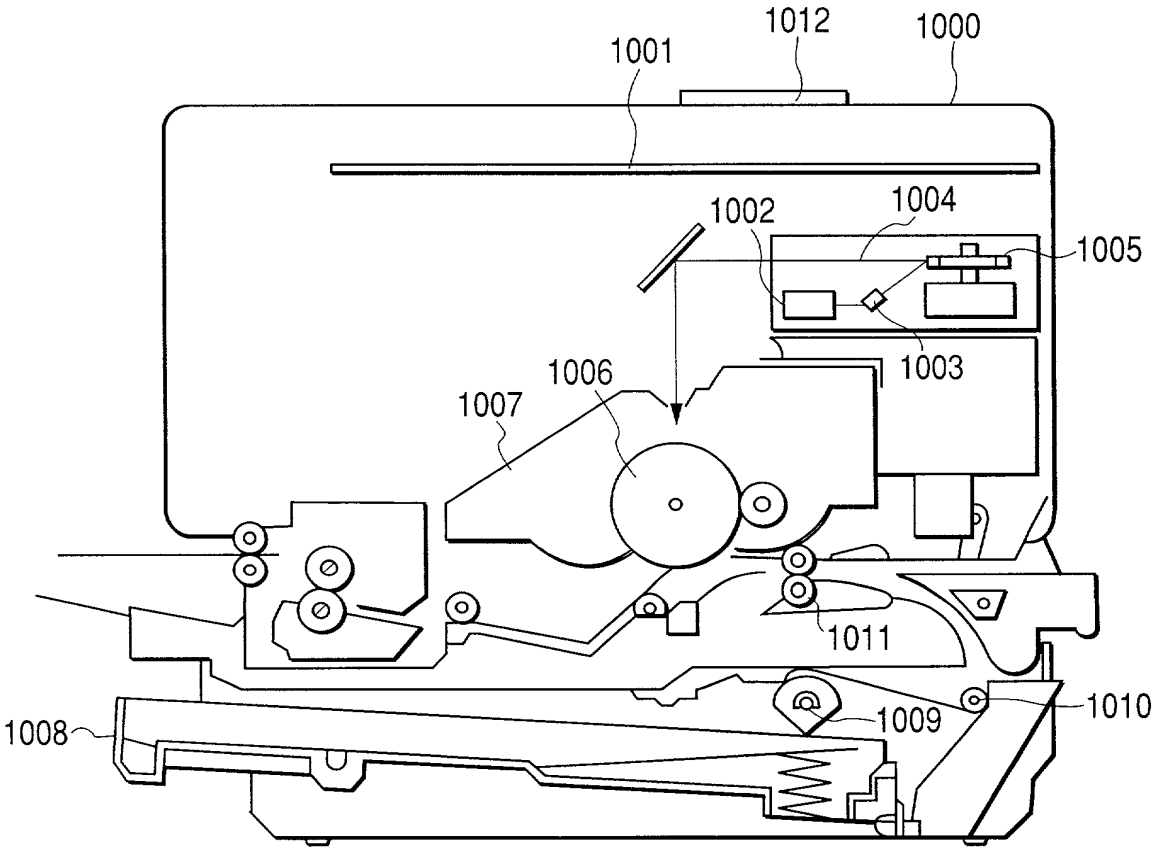
1012
1000
1001
1002
1004
1005
1003
1006
1007
1011
1010
1009
1008

FIG. 2

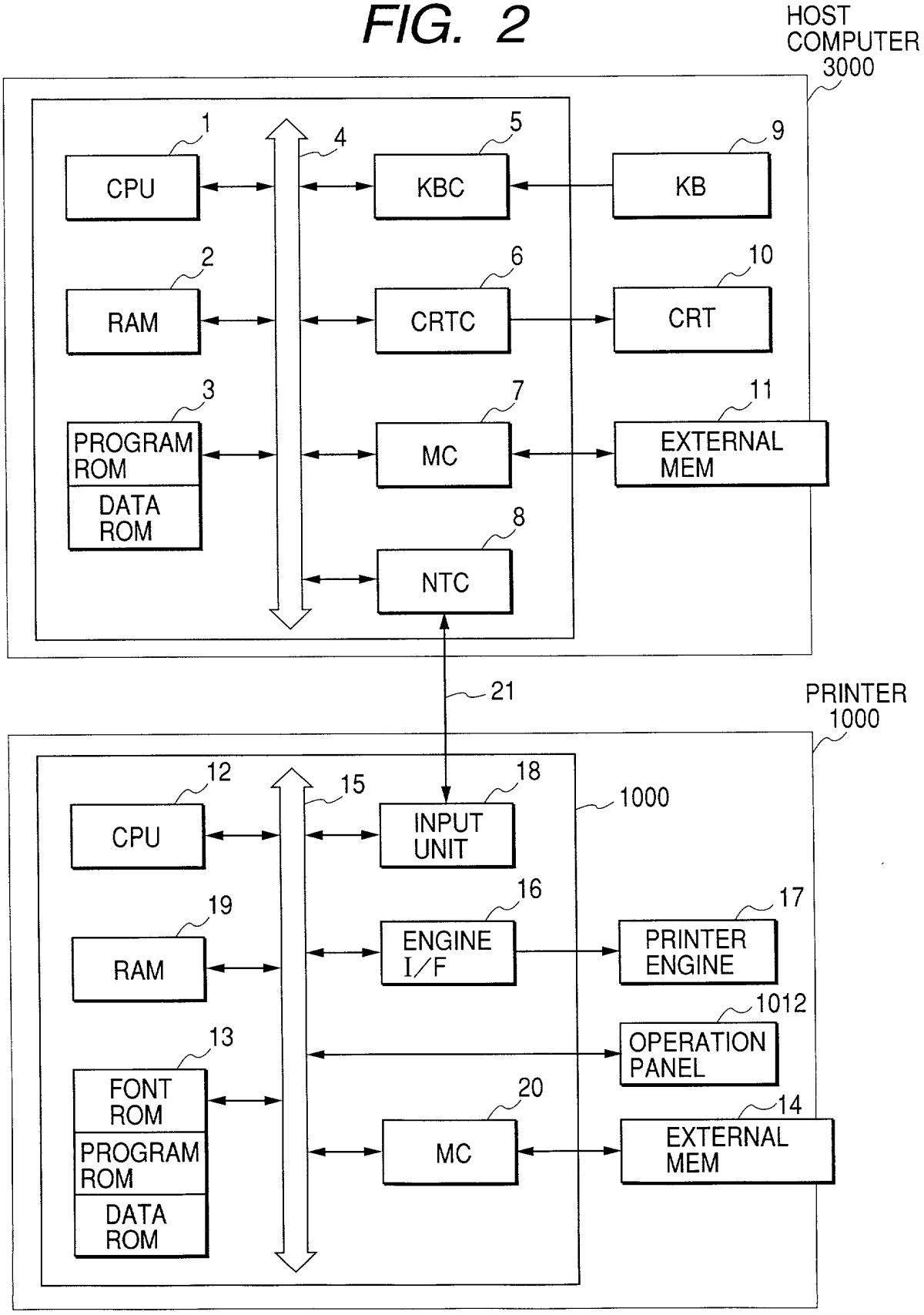
HOST COMPUTER
3000
1
4
5
9
CPU
KBC
KB
2
6
10
RAM
CRTC
CRT
3
7
11
PROGRAM ROM
DATA ROM
MC
EXTERNAL MEM
8
NTC
21
PRINTER
1000
12
15
18
1000
CPU
INPUT UNIT
16
17
19
RAM
ENGINE I/F
PRINTER ENGINE
1012
OPERATION PANEL
13
FONT ROM
PROGRAM ROM
DATA ROM
20
14
MC
EXTERNAL MEM

FIG. 3

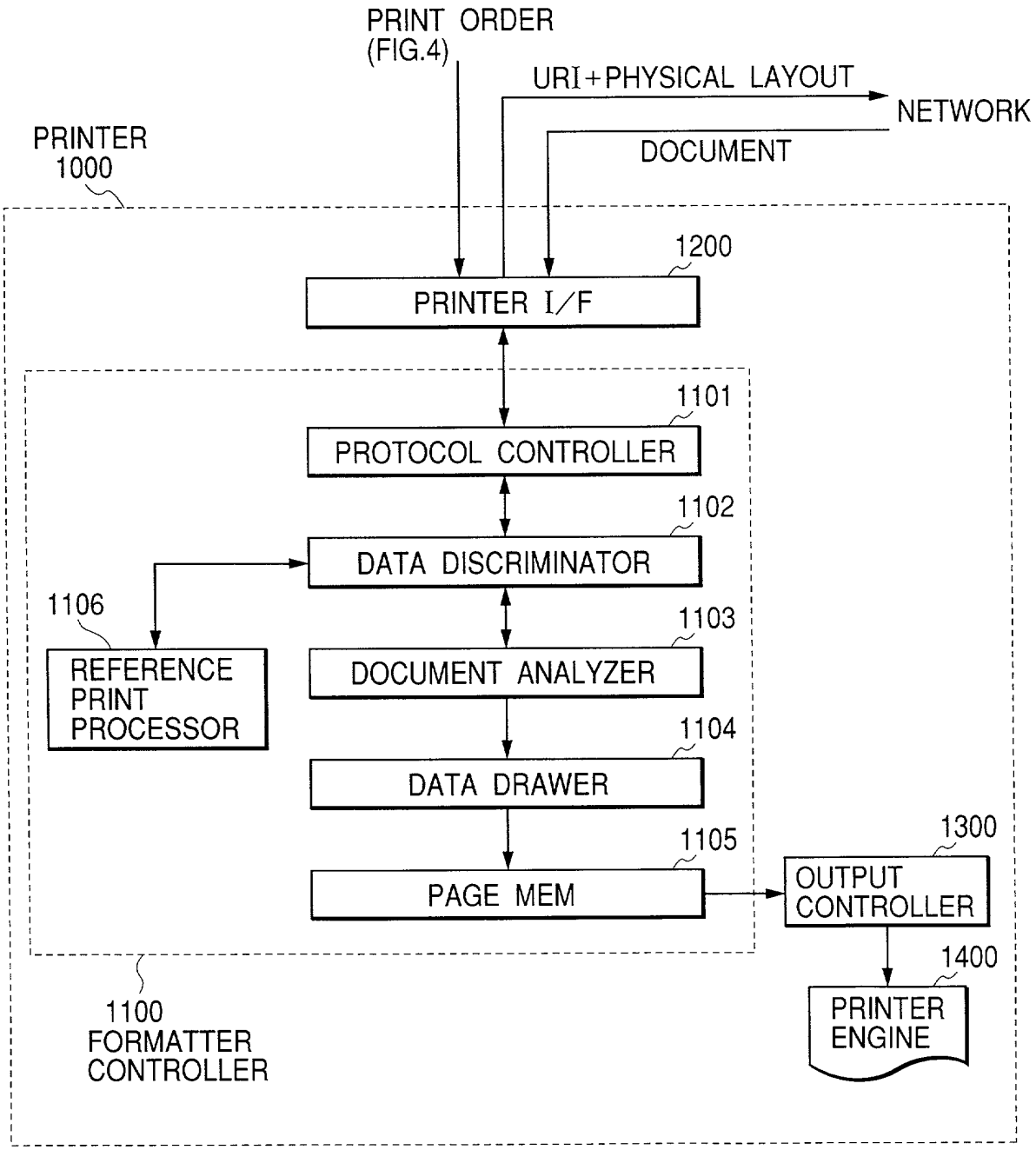
PRINT ORDER
(FIG.4)
URI+PHYSICAL LAYOUT
NETWORK
DOCUMENT
PRINTER
1000
1200
PRINTER I/F
1101
PROTOCOL CONTROLLER
1102
DATA DISCRIMINATOR
1106
REFERENCE
PRINT
PROCESSOR
1103
DOCUMENT ANALYZER
1104
DATA DRAWER
1105
PAGE MEM
1300
OUTPUT
CONTROLLER
1400
PRINTER
ENGINE
1100
FORMATTER
CONTROLLER

FIG. 4

```
〈order reference-print〉
〈document="http://myserver. com/mydocument" /〉
〈papersize〉 A4 〈/paper〉
〈orientation〉 portrait 〈/orientation〉
〈base-font-size〉 8pt 〈/base-font-size〉
〈/order〉
```

FIG. 5

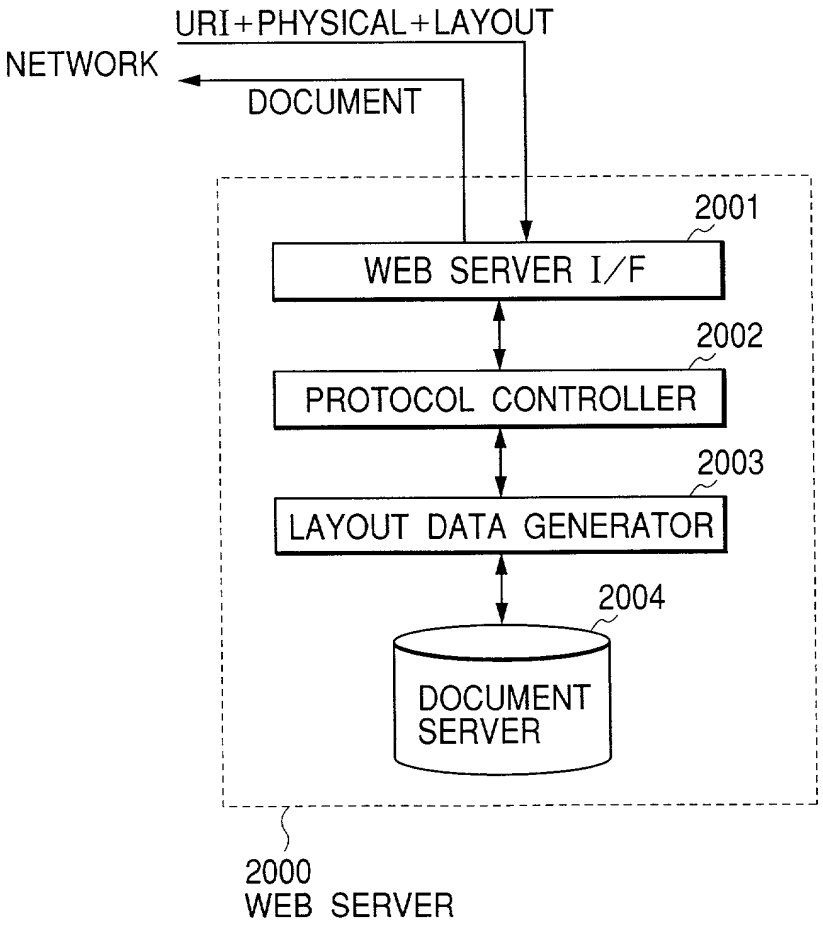

FIG. 6

```
〈xml stylesheet="\mystylesheet"〉
〈doc〉
  〈title〉 Sample 〈/title〉
  〈para〉
  This document is written in Markup
  Language, logical data structure and lo
  gical layout.
  〈/para〉
  〈table〉 〈/table〉
  〈tfooter〉 table 1 〈/tfooter〉
  〈doc〉
```

FIG. 7

```
〈stylesheet〉
〈template pattern="title"〉
〈font size=big fontcolor=red position=center〉
〈template〉

〈template pattern="para"〉
〈fontsize=small fontcolor=black〉
〈pat=mesh patcolor=blue〉
〈/template〉

〈template pattern="table"〉
〈table width=4height=3〉
〈/template〉

〈template pattern="tfooter"〉
〈font size=middle position=center〉
〈/template〉
〈/stylesheet〉
```

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0656020-062201

FIG. 8

```
〈document〉
〈unit size=mm/〉
〈text size=24po color=red x=100 y=0〉
Sample 〈/text〉
〈fill pat="0xaa aa" color=blue〉〈/fill〉
〈rect 10 200 1000 300/〉
〈text size=10po color=black x=0 y=30〉
This document is written in 〈/text〉
〈text x=20 y=30〉
Markup Language, logical data 〈/text〉
〈text x=40 y=30〉
Structure and logical layout. 〈/text〉
〈fill pat=null/〉
〈rect 40 50 200 100/〉
〈line 80 50 80 100/〉
〈line 120 50 80 100/〉
〈line 160 50 80 100/〉
〈line 200 50 80 100/〉
〈line 40 70 200 70/〉
〈line 40 90 200 90/〉
〈/document〉
```

FIG. 9

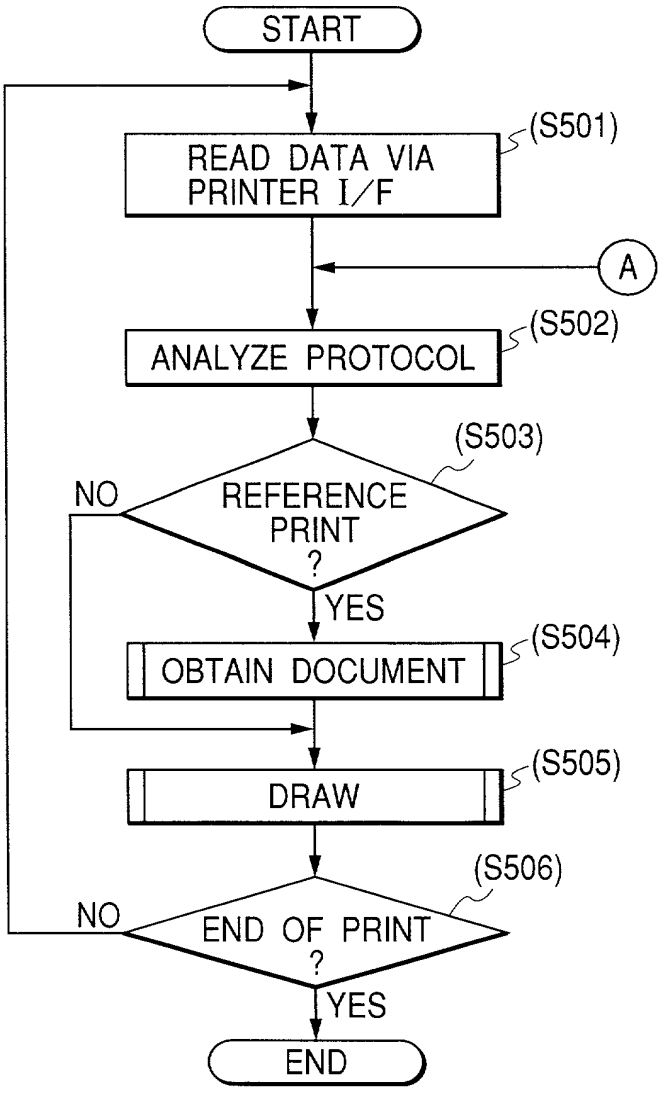
START
READ DATA VIA PRINTER I/F
(S501)
A
ANALYZE PROTOCOL
(S502)
(S503)
NO
REFERENCE PRINT ?
YES
OBTAIN DOCUMENT
(S504)
DRAW
(S505)
(S506)
NO
END OF PRINT ?
YES
END

FIG. 10

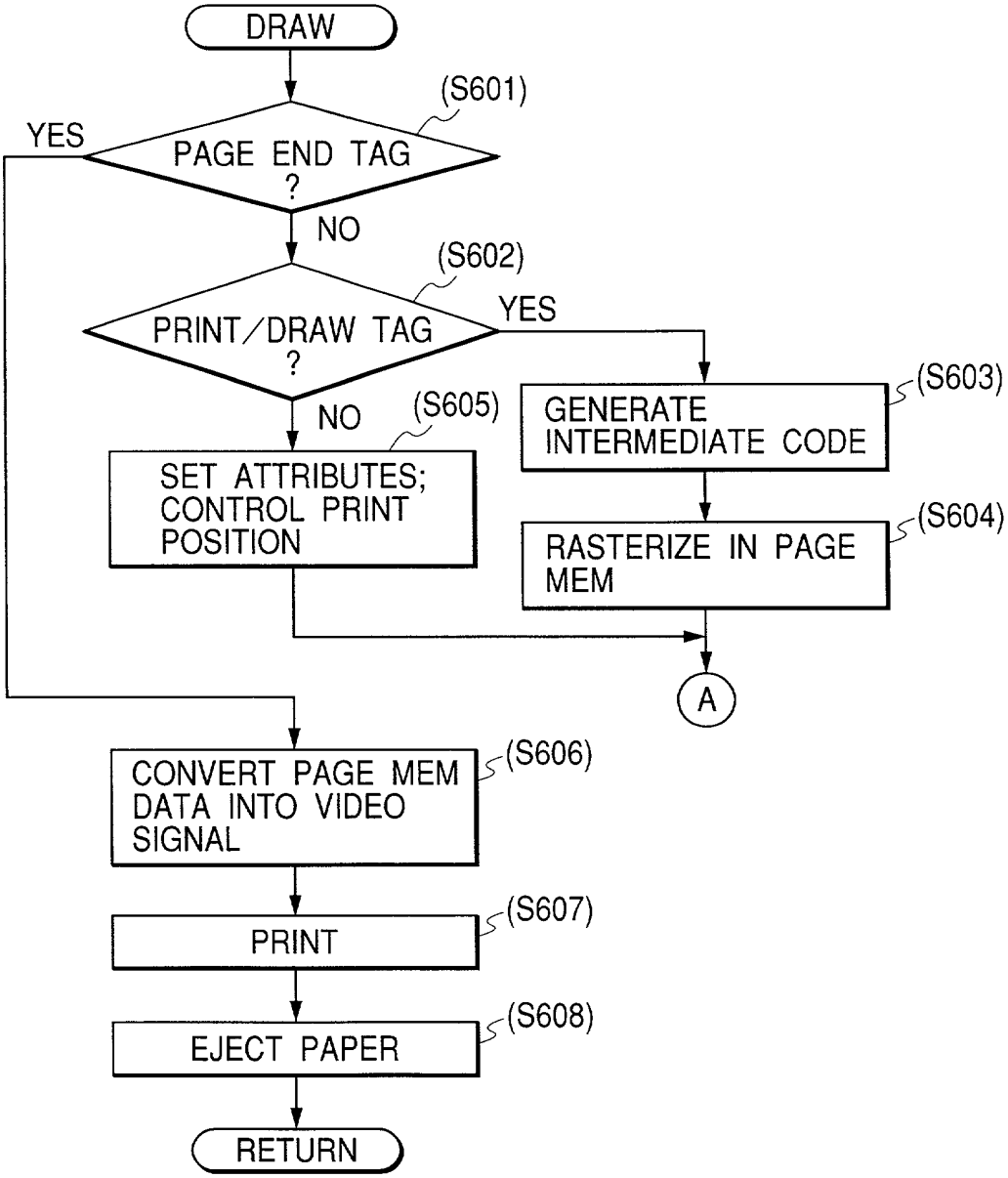
DRAW
(S601)
PAGE END TAG ?
YES
NO
(S602)
PRINT/DRAW TAG ?
YES
NO
(S603)
GENERATE INTERMEDIATE CODE
(S604)
RASTERIZE IN PAGE MEM
(S605)
SET ATTRIBUTES; CONTROL PRINT POSITION
A
(S606)
CONVERT PAGE MEM DATA INTO VIDEO SIGNAL
(S607)
PRINT
(S608)
EJECT PAPER
RETURN

FIG. 11

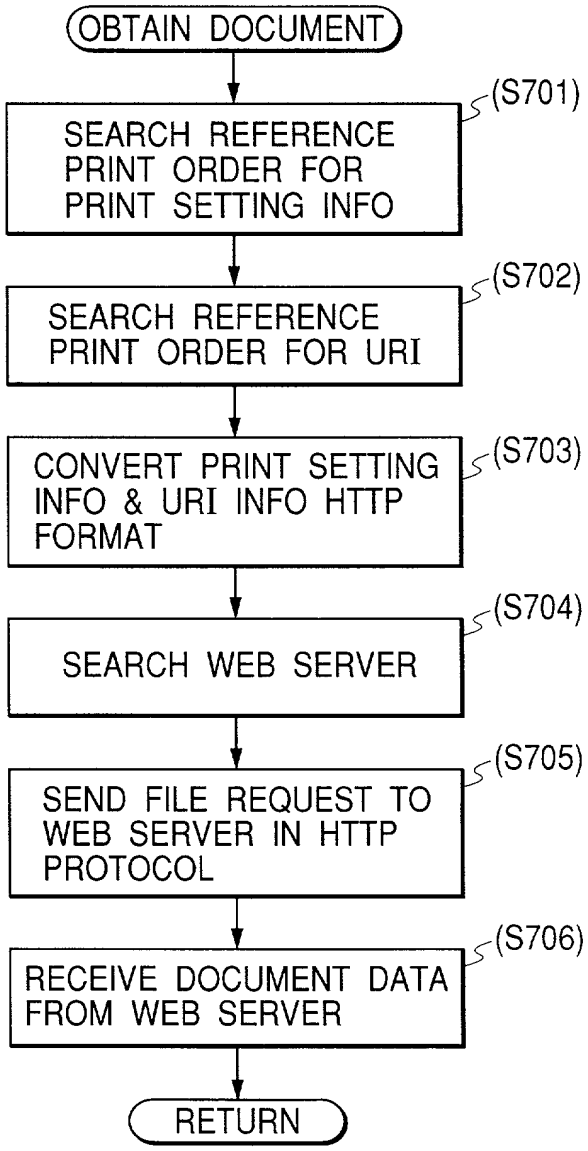
OBTAIN DOCUMENT
SEARCH REFERENCE PRINT ORDER FOR PRINT SETTING INFO
(S701)
SEARCH REFERENCE PRINT ORDER FOR URI
(S702)
CONVERT PRINT SETTING INFO & URI INFO HTTP FORMAT
(S703)
SEARCH WEB SERVER
(S704)
SEND FILE REQUEST TO WEB SERVER IN HTTP PROTOCOL
(S705)
RECEIVE DOCUMENT DATA FROM WEB SERVER
(S706)
RETURN

FIG. 12

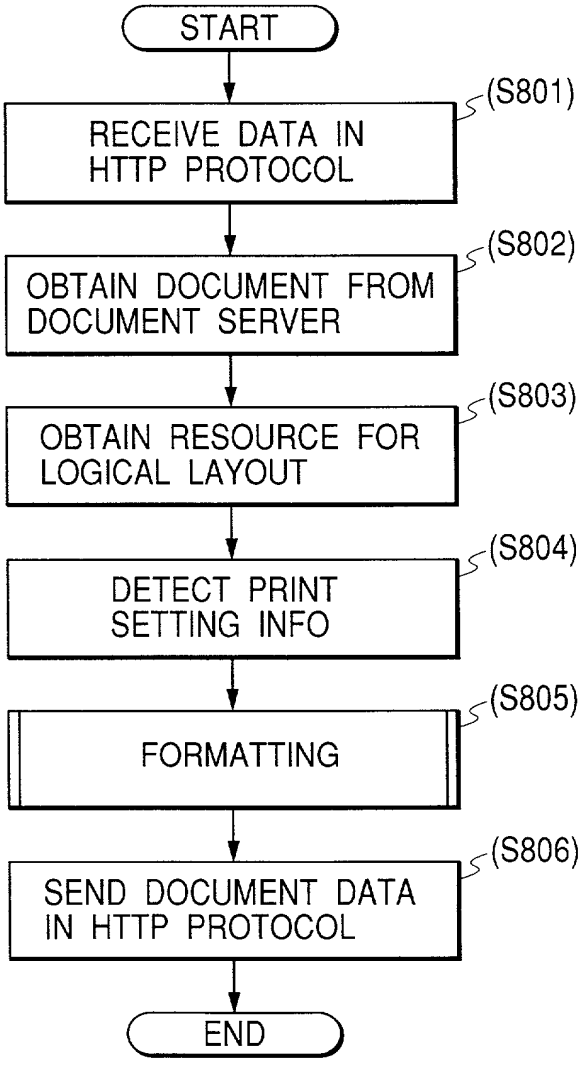

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FIG. 13

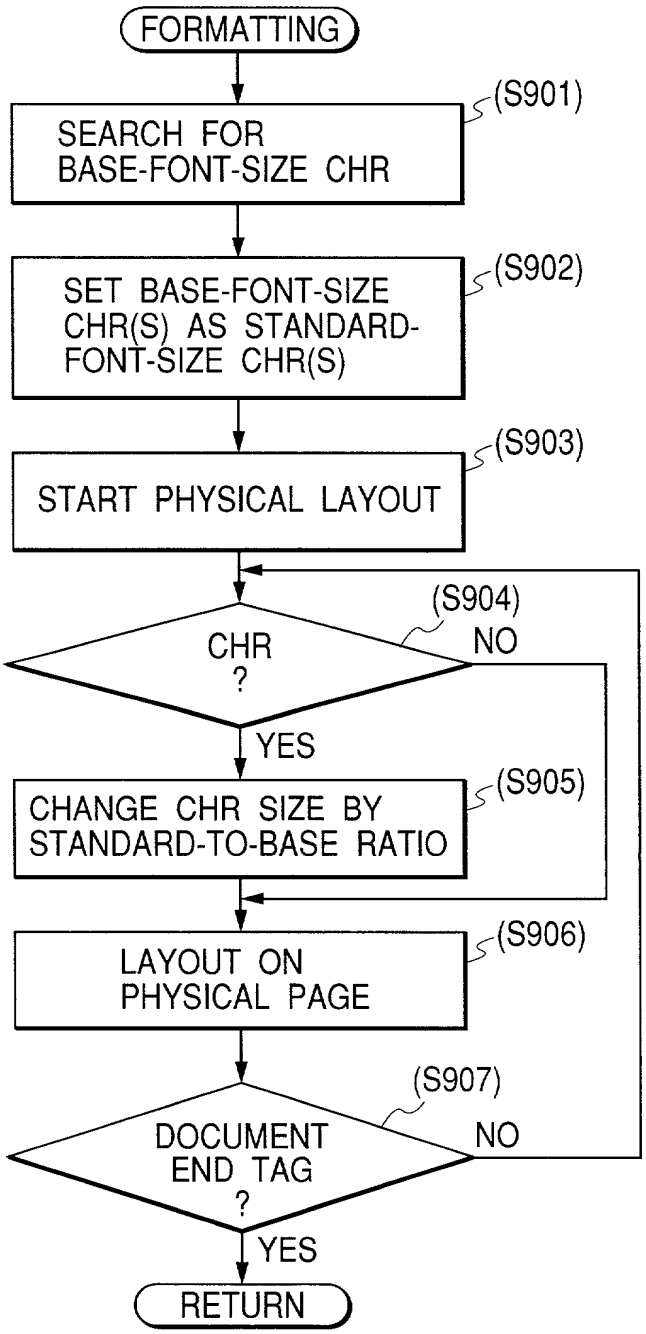
FORMATTING
SEARCH FOR BASE-FONT-SIZE CHR
(S901)
SET BASE-FONT-SIZE CHR(S) AS STANDARD-FONT-SIZE CHR(S)
(S902)
START PHYSICAL LAYOUT
(S903)
CHR ?
(S904)
NO
YES
CHANGE CHR SIZE BY STANDARD-TO-BASE RATIO
(S905)
LAYOUT ON PHYSICAL PAGE
(S906)
DOCUMENT END TAG ?
(S907)
NO
YES
RETURN

FIG. 14

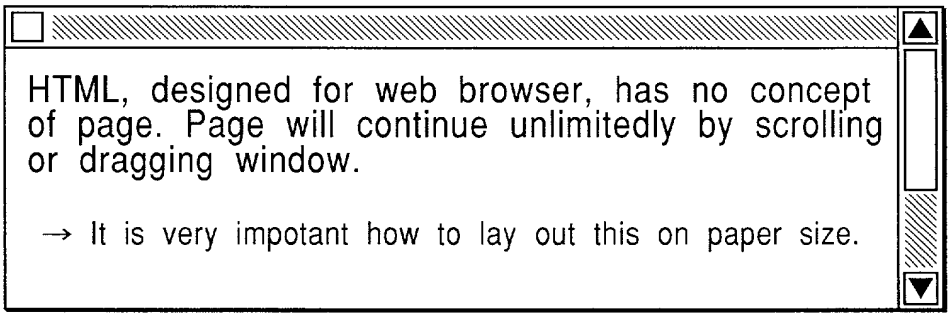

FIG. 15

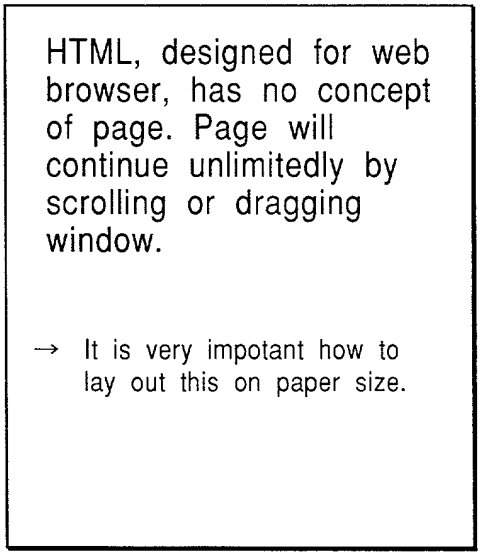

FIG. 16

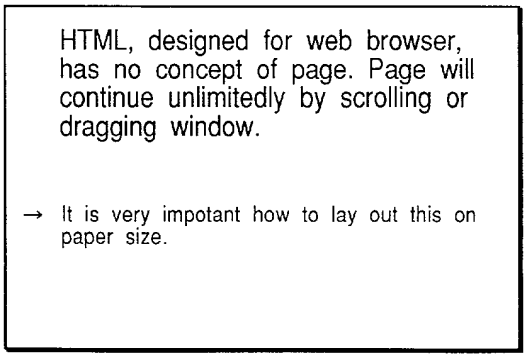

FIG. 17

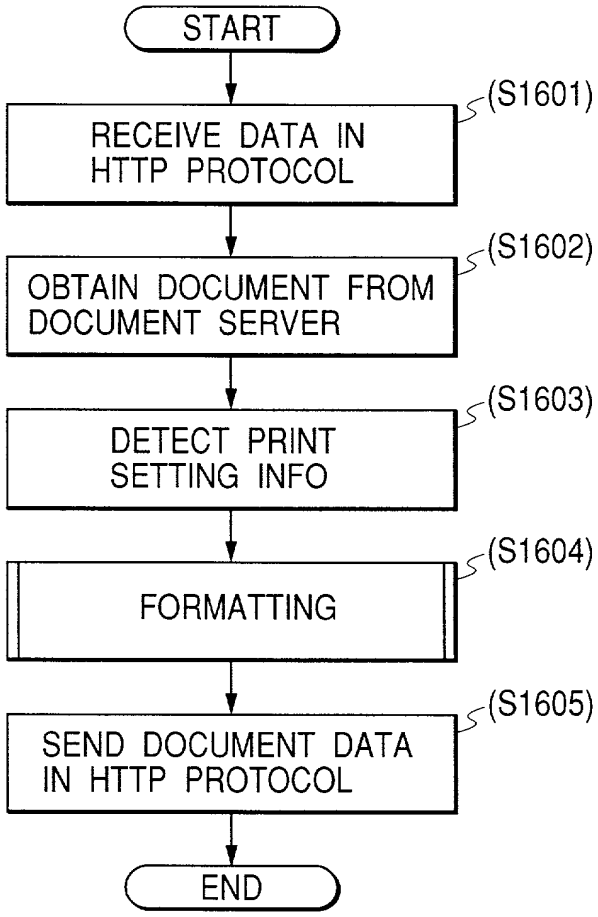

FIG. 18

```
〈html〉
〈body bgcolor="#ffffff" 〉
〈H1〉 Sample 〈/H1〉
〈table border=" 0" width=" 100%" 〉
  〈tr〉
    〈td width=" 60%" 〉 〈p align=" center" 〉 Sample 〈/td〉
    〈td width=" 20%" 〉 〈p align=" right" 〉 Data 〈/td〉
〈/able〉
〈hr〉
〈p〉 〈font size=" 4" 〉 html document 〈/font〉 〈/p〉
〈/body〉
〈/html〉
```

FIG. 19

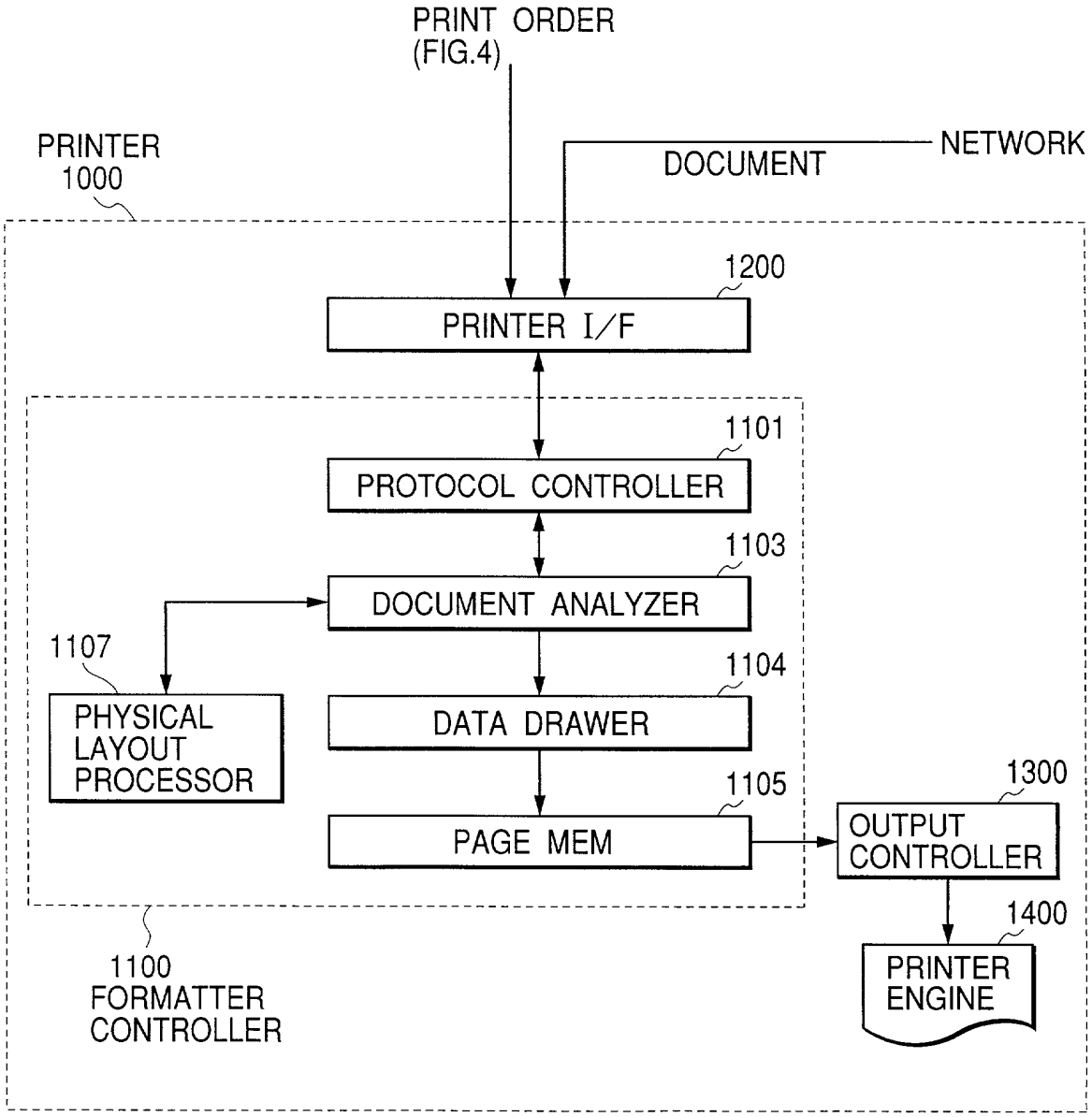
PRINT ORDER
(FIG.4)
PRINTER
1000
DOCUMENT
NETWORK
1200
PRINTER I/F
1101
PROTOCOL CONTROLLER
1103
DOCUMENT ANALYZER
1107
PHYSICAL
LAYOUT
PROCESSOR
1104
DATA DRAWER
1105
PAGE MEM
1300
OUTPUT
CONTROLLER
1400
PRINTER
ENGINE
1100
FORMATTER
CONTROLLER

FIG. 20

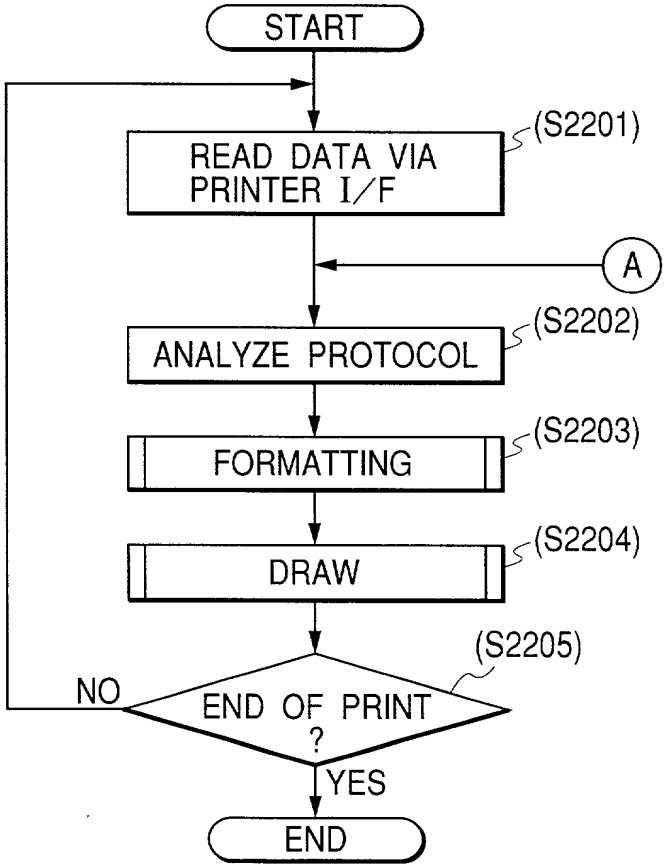
START
READ DATA VIA PRINTER I/F
(S2201)
A
ANALYZE PROTOCOL
(S2202)
FORMATTING
(S2203)
DRAW
(S2204)
(S2205)
NO
END OF PRINT ?
YES
END

FIG. 21

MEMORY MAP OF MEM MEDIUM
(FD/CD-ROM)

DIRECTORY
1ST DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG.9
2ND DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG.10
3RD DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG.11
4TH DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG.12
5TH DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG.13
6TH DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG.17
7TH DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG.20

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FIG. 22

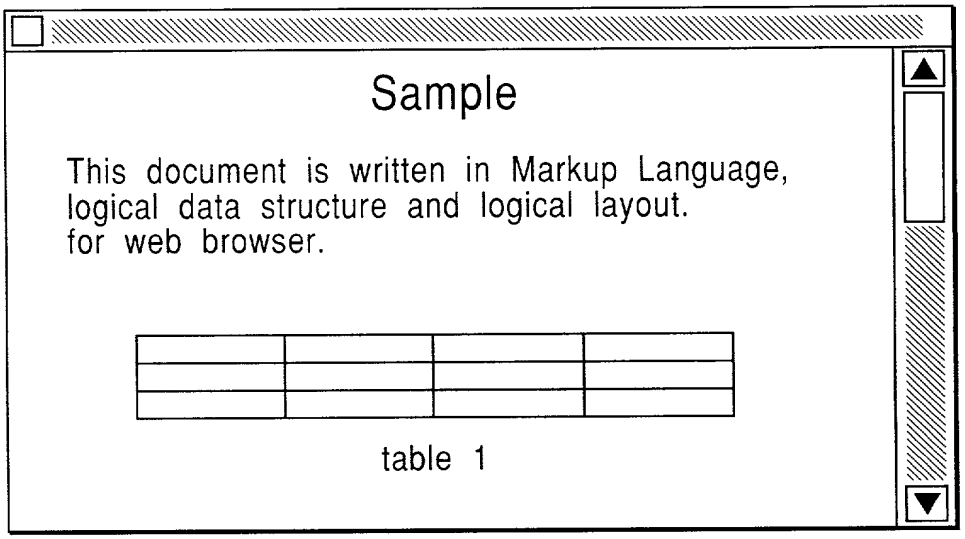

FIG. 23

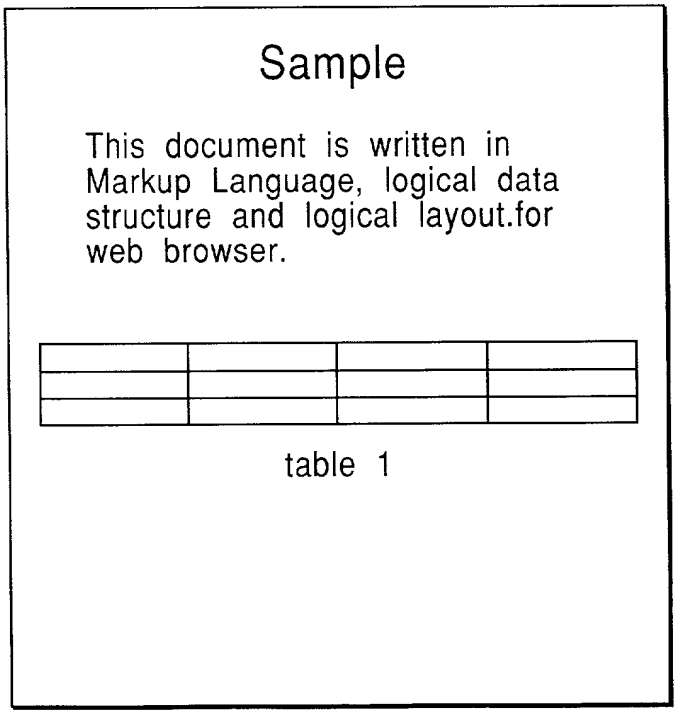

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FIG. 24

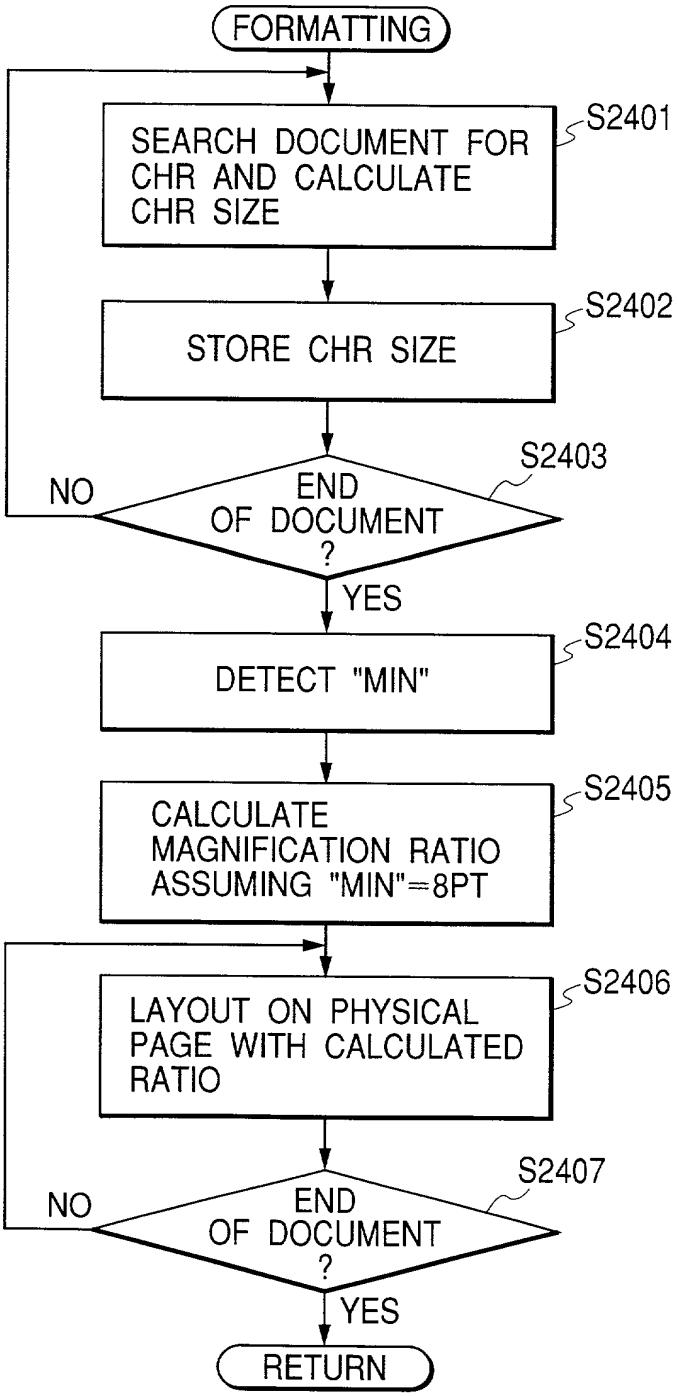
FORMATTING
SEARCH DOCUMENT FOR CHR AND CALCULATE CHR SIZE
S2401
STORE CHR SIZE
S2402
END OF DOCUMENT ?
S2403
NO
YES
DETECT "MIN"
S2404
CALCULATE MAGNIFICATION RATIO ASSUMING "MIN"=8PT
S2405
LAYOUT ON PHYSICAL PAGE WITH CALCULATED RATIO
S2406
END OF DOCUMENT ?
S2407
NO
YES
RETURN

FIG. 25

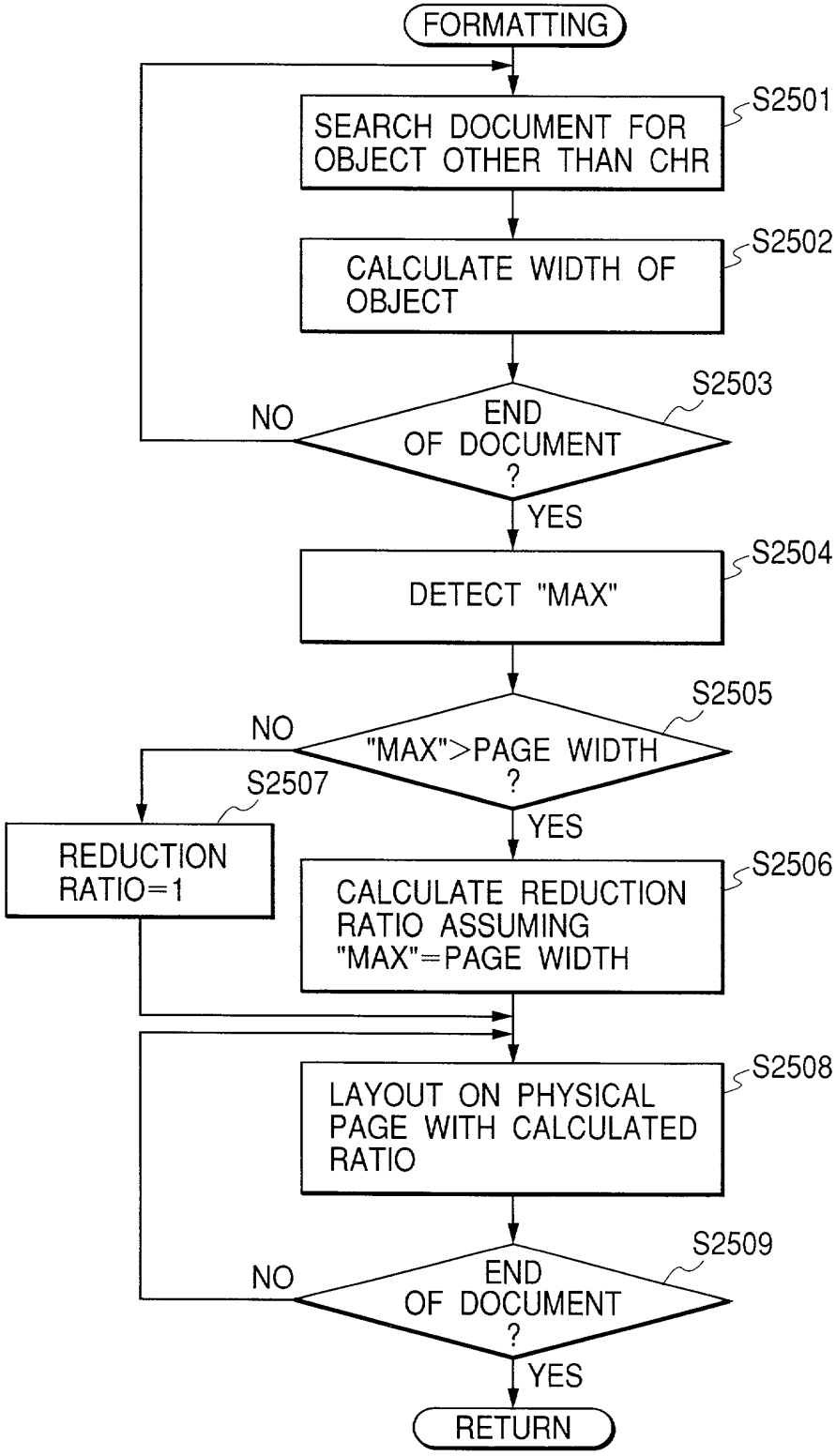
FORMATTING
SEARCH DOCUMENT FOR OBJECT OTHER THAN CHR
S2501
CALCULATE WIDTH OF OBJECT
S2502
END OF DOCUMENT ?
S2503
NO
YES
DETECT "MAX"
S2504
"MAX">PAGE WIDTH ?
S2505
NO
YES
REDUCTION RATIO=1
S2507
CALCULATE REDUCTION RATIO ASSUMING "MAX"=PAGE WIDTH
S2506
LAYOUT ON PHYSICAL PAGE WITH CALCULATED RATIO
S2508
END OF DOCUMENT ?
S2509
NO
YES
RETURN

FIG. 26

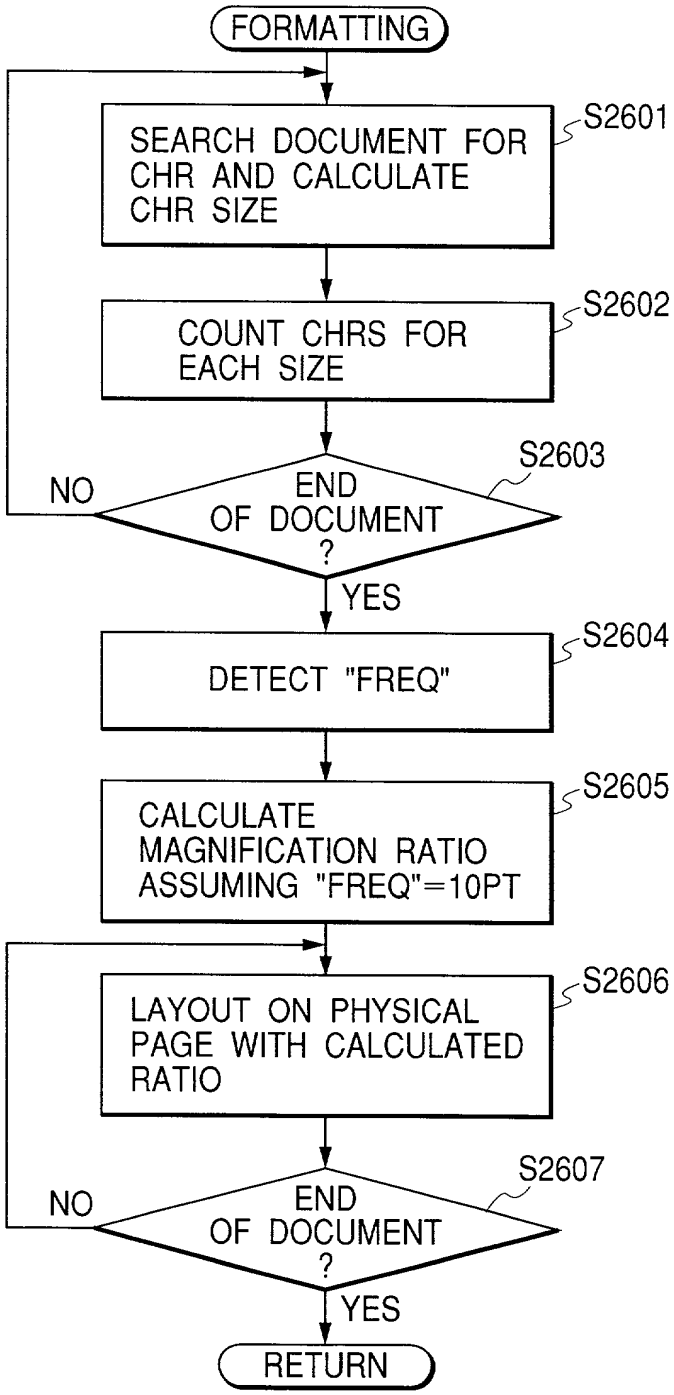
FORMATTING
SEARCH DOCUMENT FOR CHR AND CALCULATE CHR SIZE
S2601
COUNT CHRS FOR EACH SIZE
S2602
END OF DOCUMENT ?
S2603
NO
YES
DETECT "FREQ"
S2604
CALCULATE MAGNIFICATION RATIO ASSUMING "FREQ"=10PT
S2605
LAYOUT ON PHYSICAL PAGE WITH CALCULATED RATIO
S2606
END OF DOCUMENT ?
S2607
NO
YES
RETURN

FIG. 27

```
〈html〉
〈body bgcolor="#ffffff"〉
〈H1〉Sample〈/H1〉
This document is written in Markup Language. logical data
structure and logical layout.for web browser.
〈table border="0" width="100%"〉
 〈tr〉
   〈td width="60%"〉〈p align="center"〉.....〈/td〉
   〈td width="20%"〉〈p align="right"〉.....〈/td〉
 〈/tr〉
〈/table〉
〈hr〉
〈p〉〈font size="4"〉table 1〈/font〉〈/p〉
〈/body〉
〈/html〉
```

FIG. 28

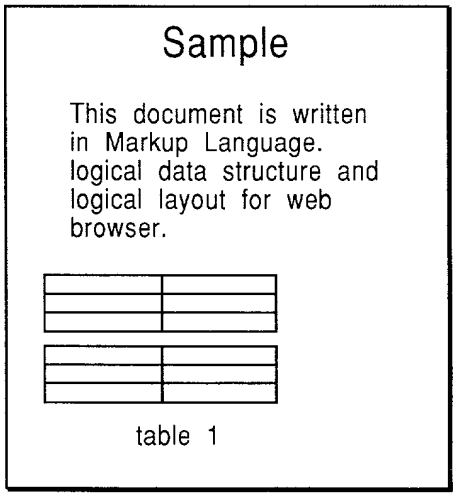

FIG. 29

```
〈document〉
〈unit size="mm"/〉
〈text size="28pt" color="red" x="100" y="0"〉
Sample〈/text〉
〈fill pat="aa aa" color="blue"〉〈/fill〉
〈rect 10 200 200 500/〉
〈text size="12pt" color="black" x="0" y="1"〉
This document is written 〈/text〉
〈text size="12pt" x="0" y="2"〉
in Markup Language. 〈/text〉
〈text size="12pt" x="0" y="3"〉
logical data structure and 〈/text〉
〈text size="12pt" x="0" y="4"〉
logical layout for web 〈/text〉
〈text size="12pt" x="0" y="5"〉
browser. 〈/text〉
〈fill pat="null"/〉
〈rect 40 50 120 80/〉
〈line 80 50 80 80/〉
〈line 40 60 120 60/〉
〈line 40 70 120 70/〉
〈rect 40 90 120 120/〉
〈line 80 90 80 120/〉
〈line 40 100 120 100/〉
〈line 40 110 120 110/〉
〈text size="8pt" x="3" y="10"〉
table 1 〈/text〉
〈/document〉
```

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FIG. 30

```
〈document〉
〈unit size="mm"/〉
〈text size="20pt" color="red" x="100" y="0"〉
Sample〈/text〉
〈fill pat="aa aa" color="blue"〉〈/fill〉
〈rect 30 200 200 500/〉
〈text size="8pt" color="black" x="0" y="1"〉
This document is written in 〈/text〉
〈text size="8pt" x="0" y="2"〉
Markup Language. logical data〈/text〉
〈text size="8pt" x="0" y="3"〉
structure and logical layout for〈/text〉
〈text size="8pt" x="0" y="4"〉
web browser〈/text〉
〈fill pat="null"/〉
〈rect 30 50 230 110/〉
〈line 80 50 80 110/〉
〈line 130 50 130 110/〉
〈line 180 50 180 110/〉
〈line 30 70 230 70/〉
〈line 30 90 230 90/〉
〈text size="6pt" x="3" y="10"〉
table 1 〈/text〉
〈/document〉
```

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FIG. 31

```
〈document〉
〈unit size="mm"/〉
〈text size="23pt" color="red" x="100" y="0"〉
Sample〈/text〉
〈fill pat="aa aa" color="blue"〉〈/fill〉
〈rect 30 200 200 500/〉
〈text size="10pt" color="black" x="0" y="1"〉
This document is written in〈/text〉
〈text size="10pt" x="0" y="2"〉
Markup Language,logical〈/text〉
〈text size="10pt" x="0" y="3"〉
data structure and logical〈/text〉
〈text size="10pt" x="0" y="4"〉
layout for web browser〈/text〉
〈fill pat="null"/〉
〈rect 0 50 240 110/〉
〈line 60 50 60 110/〉
〈line 120 50 120 110/〉
〈line 180 50 180 110/〉
〈line 0 70 240 70/〉
〈line 0 90 240 90/〉
〈text size="7pt" x="3" y="10"〉
table 1 〈/text〉
〈/document〉
```

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FIG. 32

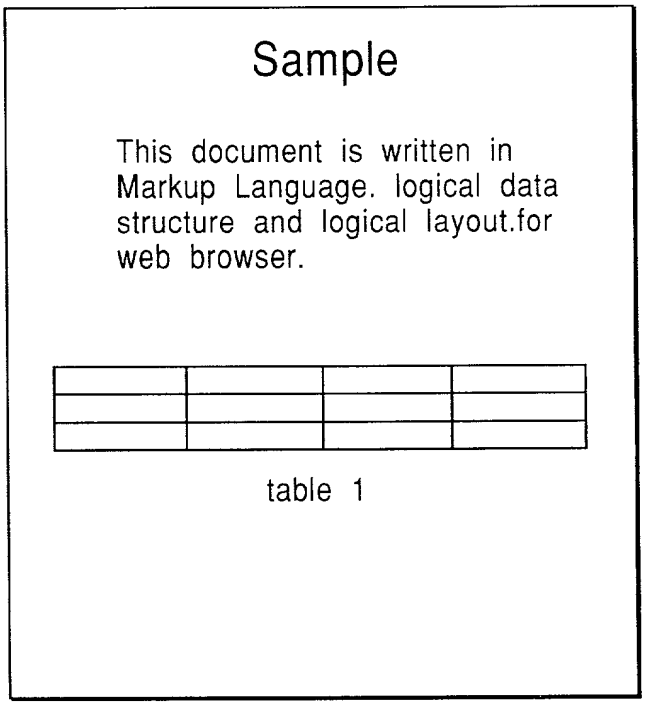

Sample
This document is written in Markup Language. logical data structure and logical layout.for web browser.
table 1

FIG. 33

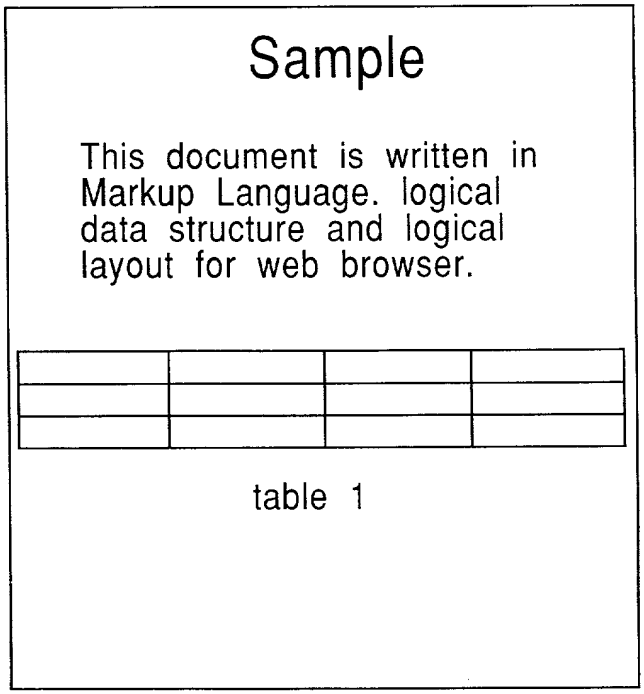

Sample
This document is written in Markup Language. logical data structure and logical layout for web browser.
table 1

FIG. 34

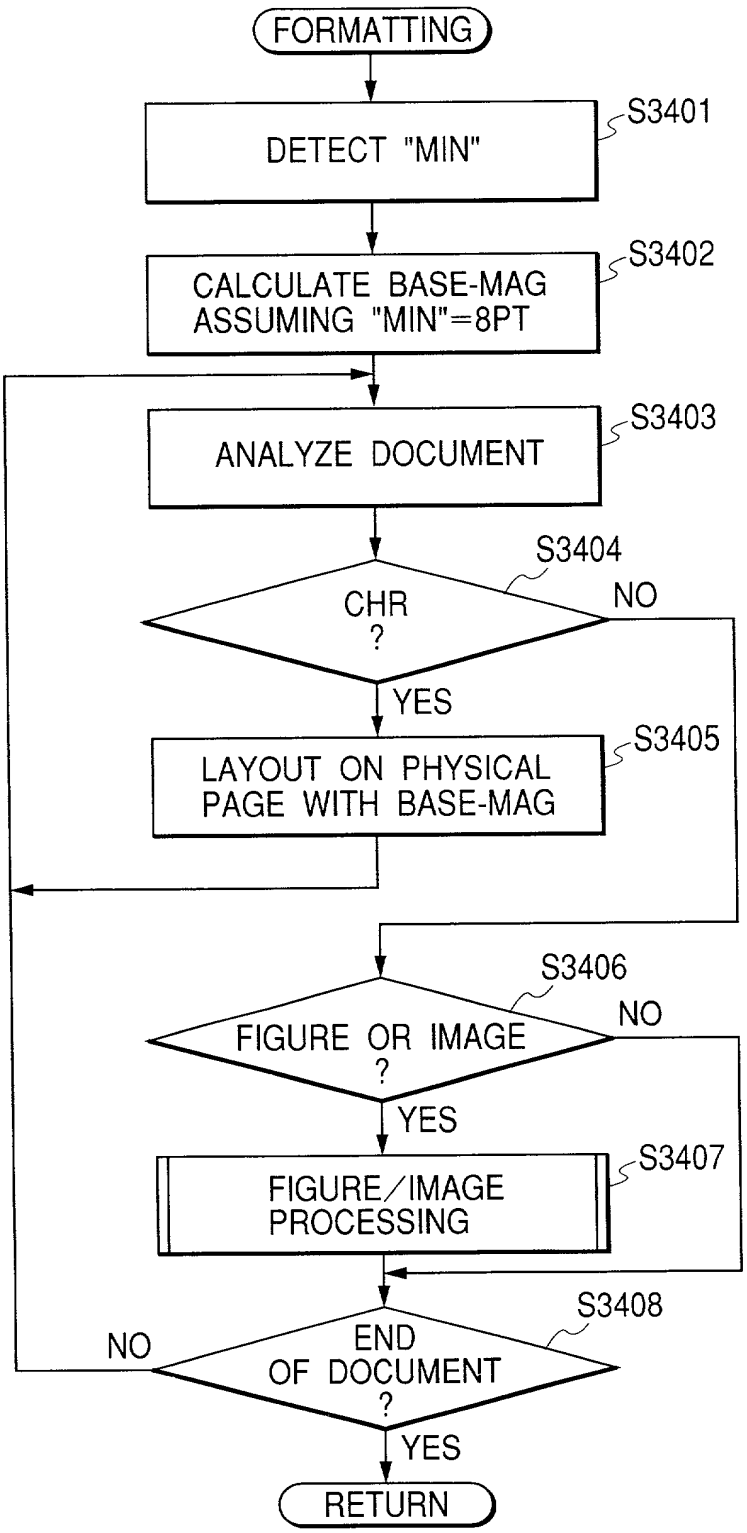

FORMATTING
DETECT "MIN"
S3401
CALCULATE BASE-MAG ASSUMING "MIN"=8PT
S3402
ANALYZE DOCUMENT
S3403
CHR ?
S3404
NO
YES
LAYOUT ON PHYSICAL PAGE WITH BASE-MAG
S3405
FIGURE OR IMAGE ?
S3406
NO
YES
FIGURE/IMAGE PROCESSING
S3407
END OF DOCUMENT ?
S3408
NO
YES
RETURN

FIG. 35

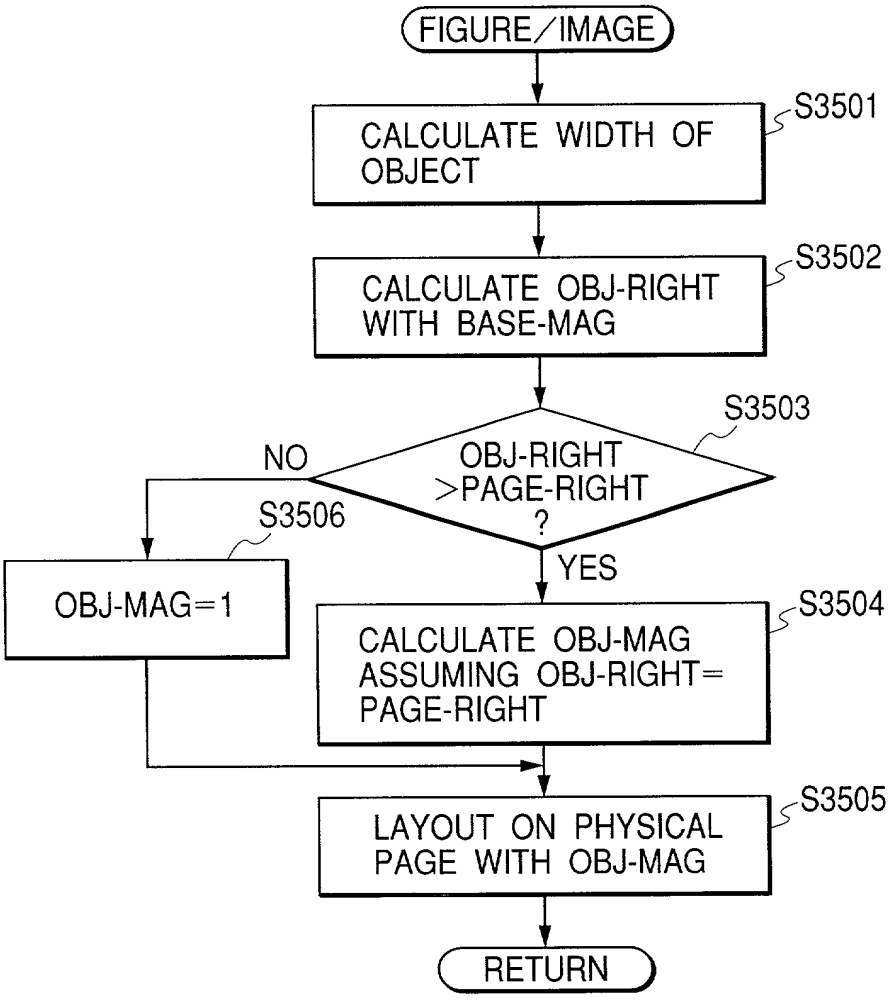

FIGURE/IMAGE
CALCULATE WIDTH OF OBJECT
S3501
CALCULATE OBJ-RIGHT WITH BASE-MAG
S3502
OBJ-RIGHT >PAGE-RIGHT ?
S3503
NO
YES
OBJ-MAG=1
S3506
CALCULATE OBJ-MAG ASSUMING OBJ-RIGHT= PAGE-RIGHT
S3504
LAYOUT ON PHYSICAL PAGE WITH OBJ-MAG
S3505
RETURN

FIG. 36

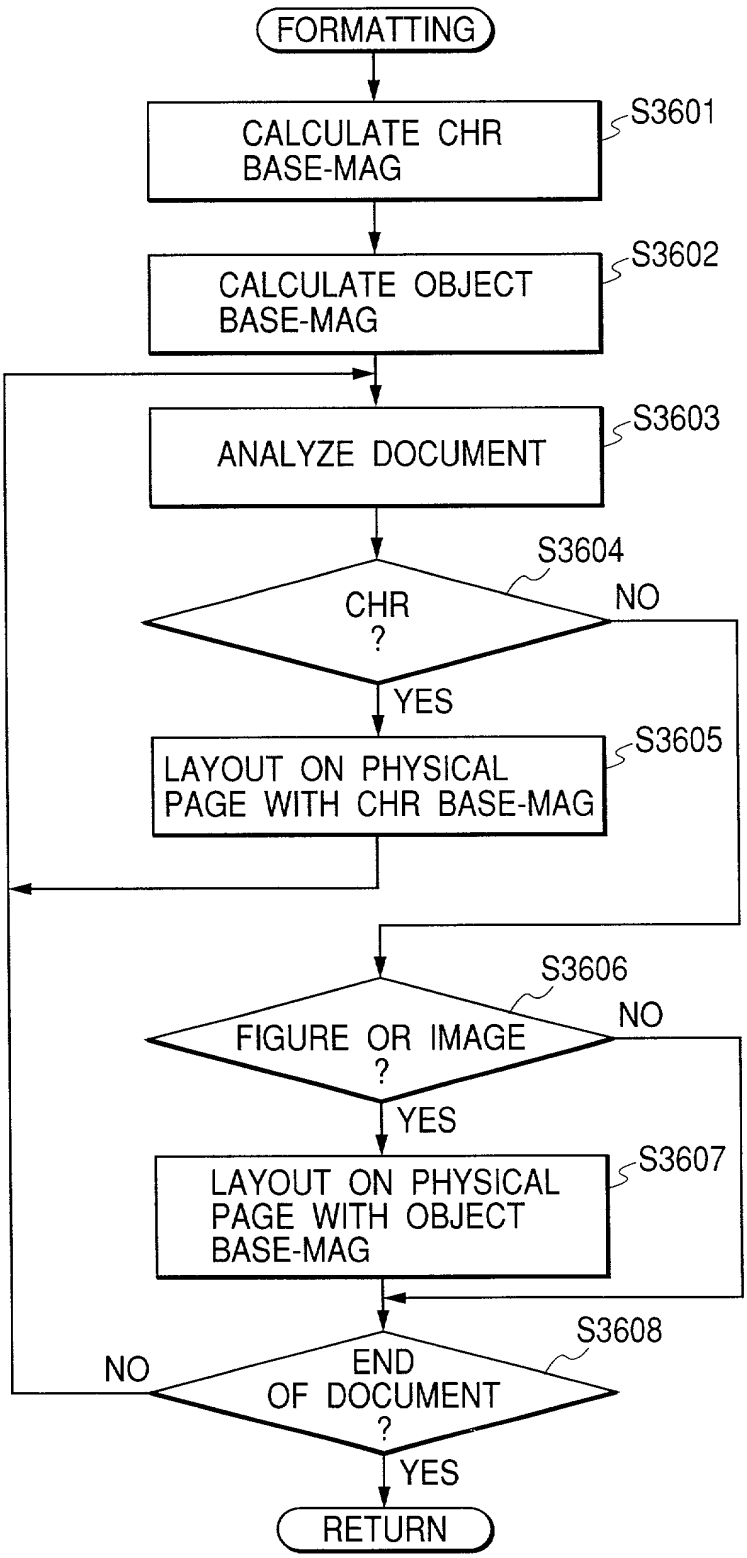

FORMATTING
CALCULATE CHR BASE-MAG
S3601
CALCULATE OBJECT BASE-MAG
S3602
ANALYZE DOCUMENT
S3603
CHR ?
S3604
NO
YES
LAYOUT ON PHYSICAL PAGE WITH CHR BASE-MAG
S3605
FIGURE OR IMAGE ?
S3606
NO
YES
LAYOUT ON PHYSICAL PAGE WITH OBJECT BASE-MAG
S3607
END OF DOCUMENT ?
S3608
NO
YES
RETURN

FIG. 37

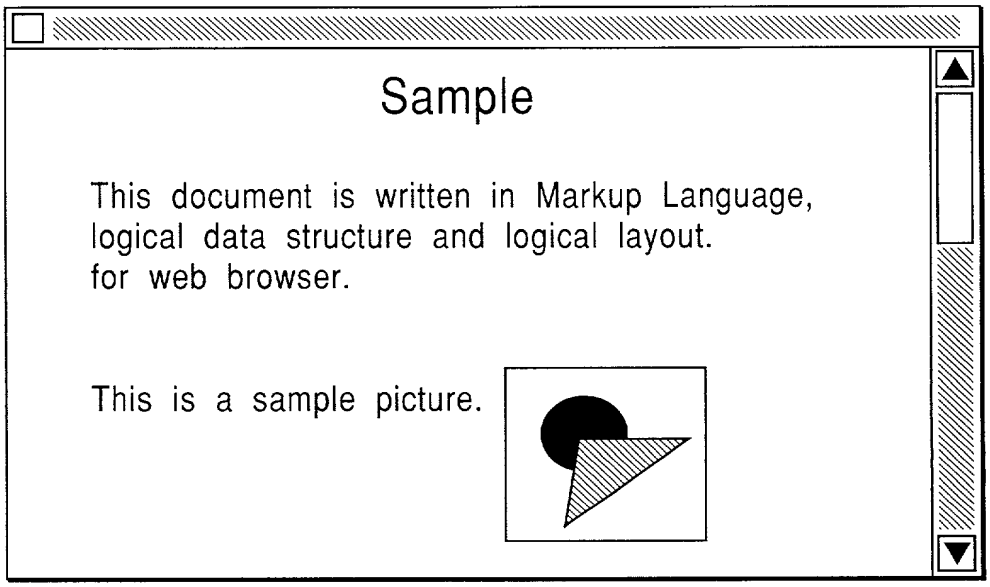
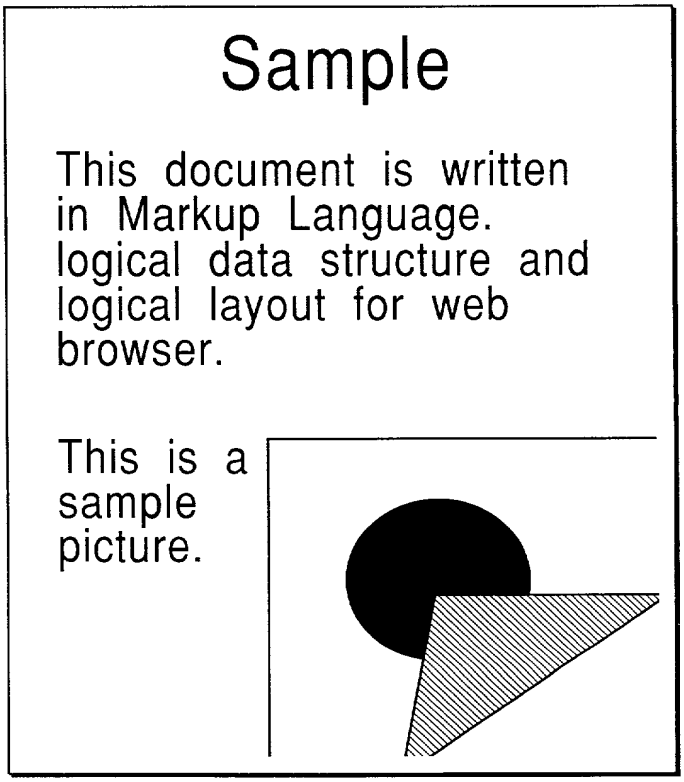


FIG. 38



0950202-0202

FIG. 39

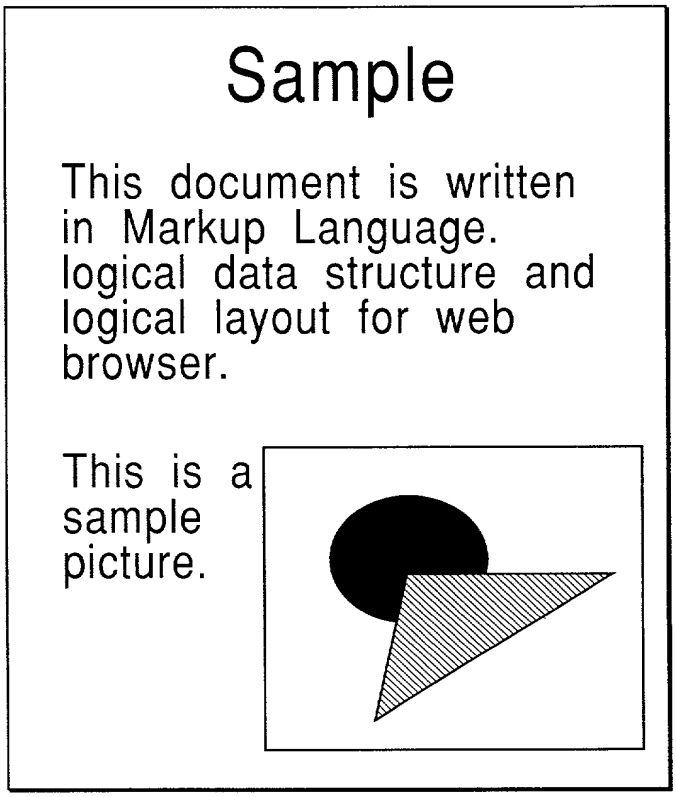


FIG. 40

```
〈order reference-print〉
 〈document＝"http://myserver.com/mydocument"/〉
 〈papersize〉A4〈/paper〉
 〈orientation〉portrait〈/orientation〉
 〈base-font-size〉8pt〈/base-font-size〉
 〈object-mag〉small〈/object-mag〉
 〈/order〉
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FIG. 41

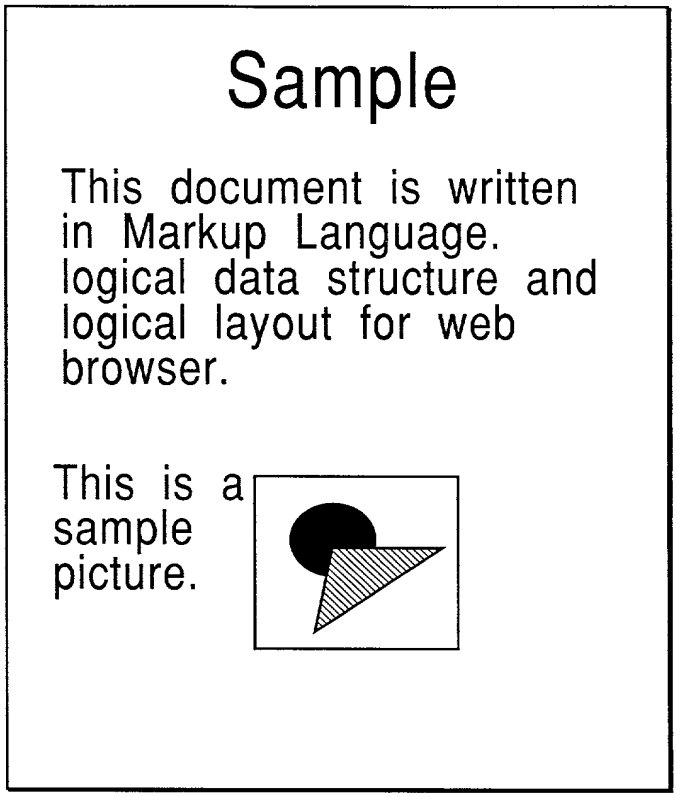
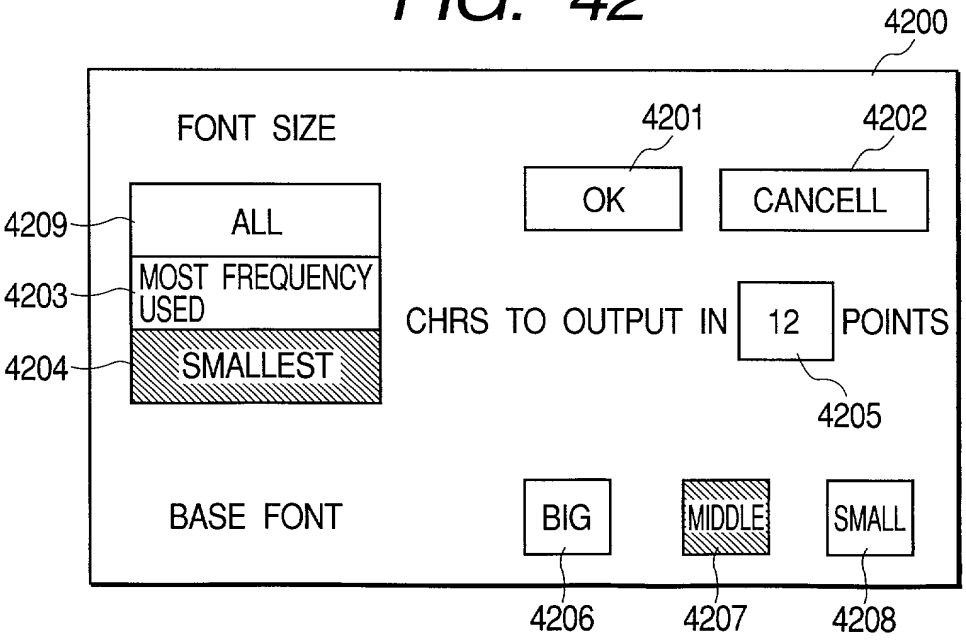

Sample
This document is written in Markup Language. logical data structure and logical layout for web browser.
This is a sample picture.

FIG. 42


4200
FONT SIZE
4201
4202
OK
CANCELL
4209
ALL
4203
MOST FREQUENCY USED
4204
SMALLEST
CHRS TO OUTPUT IN
12
POINTS
4205
BASE FONT
BIG
MIDDLE
SMALL
4206
4207
4208